Remarks

The above amended claims are submitted to be patentable over the art of record for the following reasons.

To reply the 4-18-2005 Advisory Action of no-proposed-amendment-enter, Applicant is submitting the RCE under 37 CFR 1.114 with the fee, further Amendment and Remark based on the previous submitted Amendment and Remark of 4-7-2005. Please enter all previously filed unentered Amendments and Remark and this submission in the order in which they are filed.

Based on the Applicant's 4-7-2005 Amendment and Reply to the final O.A. of 2-14-2005, by the above amendment in the RCE submission, Applicant further

(1) amends Claims 22 by deleting "as a preferred method" and adding "by a measurement monitor device";

(2) amends Claim 32 as marked above in Claim 32 to state the claim clearer;

(3) similarly to previously presented, adds a dependant Claim 35 to Claim 32; and

(4) similarly to previously presented, adds a dependant Claim 36 to Claim 35 by adding further limitations to utilize the "historical measurement data" as clarified in the previous Reply;

to narrow the related claims and to fully present the invention for reflecting superior embodiments, and to define the invention more clearly, fully, particularly and distinctly. Therefore, the amended claims do not contain any new limitations or radical changes that would raise new issues, i.e., there is no any new issue in the amendments.

First of all, please see the 4-7-2005 Reply to the final O.A. The Reply of 4-7-2005 has addressed all points raised in the final O.A. of 2-14-2005. Applicant respectfully requests the PTO to consider each one of the points, evidences and arguments in his Reply.

The following Remark in this Reply is mainly to address each point raised in the continuation sheet of the Advisory Action, and the patentability of currently amended Claims 22 and 32 and new Claims 35-36 in addition to the existed Claims, and the further arguments. Applicant again respectfully requests the PTO for reconsideration of the application in details and in whole.

I. Rebuttal and Arguments to the Points in the Advisory Action of 4-18-2005

Under 37 CFR 1.114, Please Enter All Previously Filed Amendments and Reply, and the Currently Enclosed Amendments and Reply.

The Advisory Action (A.A.) states "The arguments under applicant's section I are not persuasive because the amendment is not entered."

Applicant would like to point out the following facts.

(a) The final O.A. is issued together with two New references in a Notice of Reference Cited that lists Yamamura 6,220,057 and Yoshimura 5,073,179.

(b) The previous amendment in the Reply to the final O.A. just corrects some typographical errors, clarifies the technical words to follow the final O.A. suggestions, specifies a specific algorithm in a superior embodiment claim to follow the Examiner's suggestion that "may be patentable"; and moves some features from the dependant claims to their respective independent claims.

(c) Thus the previously amended claims don't contain any new limitations or radical changes that would raise new issues.

Rule 37 CFR 1.114 states that if the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order. Thus, Applicant respectfully requests the PTO consider all amendments, all arguments and all evidences in his all Replies.

1. The rejection to Claim 21 distorts the reference teaching of Yoshimura as pointed out in A.1.1. of 4-7-2005 Reply. Thus, the rejection is improper.

The final O.A. (p.5) states: "Claims 21-23 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Yoshimura 5073179".

However, the rejection is not correct and not proper because the final O.A. fails to follow MPEP 706.02 IV (p. 700-21) "In other words, for anticipation under 35 U.S.C. 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly.

Any feature not directly taught must be inherently present." Furthermore, it is because the final O.A. does not make a correct and full citation, but does distort the reference teaching.

The fact is clear that Yoshimura does not teach the claimed physical features, including measuring the preform, and providing a control system with the measurement to control the fiber drawing process.

1.1. The A.A. states "A.1.1.i The rejection indicates where it is disclosed; applicant has not pointed out any error."

However, Applicant has clearly pointed out error of this rejection as he stated in A.1.2. a-f of the Remark (pp. 17–19) regarding that rejection and disclosure.

The final O.A. indicates that "As to the step of measuring the preform, see col. 4, line 41: Since it is known that the preform had a diameter of 25 mm – it is clear that it was measured."

However, what Examiner's indication to citation of Yoshimura col. 4, line 41 should read completely with its sentence head as recited as follows:

"**Other conditions** were as follows:
Outer diameter of preform 25 mm
... ...". [emphasis added]

However, Examiner distorts the reference teaching by omitting or cutting so important words "**Other conditions** were as follows" from the sentence in the teaching. This kind of cutting and omission is totally not proper and should not be allowed because it distorts the reference teaching, is against the teaching completeness and is not a scientific attitude.

It does clearly show that the preform diameter 25 mm is a **condition,** not a measurement in the process. It does clearly show that Yoshimura does use a predetermined and fixed preform diameter 25 mm for his fiber drawing process as a condition. However, it does not show measuring the preform diameter for his process control in his teachings.

If, as the final O.A. assumed, the preform were measured, the preform diameter would not have been always 25 mm!

Furthermore, as pointed out in A.1.2.a, what Yoshimura teaches is to limit preform diameter change as he clearly stated (col. 3, lines 30-39) "the outer diameter of the optical fiber depends on a preform diameter, structural factors of the drawing furnace such as a heating length, a size of the furnace outlet, and a flow rate and a kind of an inert gas. **Thus, the present invention resides in not only limiting** the distance between the outlet or a center of the drawing furnace and the measuring device for the outer diameter **but also, as a whole, limiting such factors described above**." [emphasis added]

It does clearly show that Yoshimura's teaching and his process do not have a step of measuring the preform diameter during his fiber drawing process, which is a continuous process as a common knowledge.

This fact is also clearly proved by the evidence of Yoshimura's invention figures and whole teachings in his Specification.

The fact is exactly that Yoshimura does not teach "measuring either the outer diameter or shape of a preform" and "providing a control system with the measured outer diameter or shape of said preform ... to control said drawing process", however, which are recited in Claim 21 of the present invention.

Thus, it is the error of the final O.A. which does incomplete citation and distorts Yoshimura's teaching and does unfair and incorrect allegation.

Thus, the final O.A. fails to follow MPEP 706.02 IV (page 700-21) "for anticipation under 35 U.S.C. 102, the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present."

On the other hand, applicant is a frequent reviewer for more than 20 international journals with high reputation as a fair and expert reviewer. His opinion is that it is basic and important to respect facts and provide fair, objective and constructive review

comments as a referee. Applicant respectfully requests the Examiner to respect the fact and science, engineering and technology to give fair and reasonable analysis and conclusion.

1.2. The A.A. states "A.1.1.ii. The rejection indicates where it is disclosed; applicant has not pointed out any error."

Here, applicant has clearly pointed out the errors of the final O.A. in distorting the teaching, doing incomplete citation and making wrong conclusion. Please also refer to III.A.1 of the Remark of 4-7-2005 Reply (pp.17-20).

1.3. The A.A. states "A.1.1.iii. This amendment was not entered."

In view of the RCE, applicant respectfully requests Examiner to reconsider it as a whole together with other limitations in Claim 21.

The whole teaching of Yoshimura in view of Yamamura does not teach any of using any preform measurement to control the fiber drawing process. Please refer to section III.A.

Thus, based on the 35 USC 102 and 103 and MPEP 706.02, the present invention as claimed in Claim 21 is patentable over Yoshimura and Yamamura.

2. The items A.1.2. a-f of section III of Reply of 4-7-2005 do clearly prove that Yoshimura does not anticipate the present invention because of his clear lacking of key features of the present invention as claimed in Claim 21.

2.1. The A.A. states "A.1.2. a-f. It is unclear what the relevance of these things are. For example the claims do not require "continuous" measurement, a preform diameter monitor, etc."

A.1.2. a-f clearly cites what the final O.A. states and what Yoshimura teaches in a full scale. However, the final O.A. just incompletely cuts piece of Yoshimura words and makes incorrect allegation and distorts Yoshimura teaching. Items A.1.2. a-f cite Yoshimura's teaching and give rebuttal to the final O.A.. Therefore, Items A.1.2. a-f have clear relevance to rebut the final O.A. allegation of Yoshimura's anticipation.

Please consider and address all items a-f.

2.2. Regarding "continuous" measurement in A.1.2.c of applicant's reply, A.1.2.c states the fact. It is recited as follows:

"c. Furthermore, the citation of Yoshimura's example at col. 4, lines 37-41, should read 'Other conditions were as follows: Outer diameter of preform 25 mm'.

It clearly shows that it is a preset constant preform diameter condition for the process.

It is not a continuous measuring of the preform diameter in the fiber drawing process. He uses a preset preform diameter of 25mm. He does not teach a measurement on it.

If Yoshimura's process had continuously measured the preform diameter, he would have listed or described any inevitable preform diameter changes in his example. If Yoshimura's preform was measured as same as the present invention for the process, the outer diameter of Yoshiumura's preform would not be all even 25 mm along the whole preform. It is impossible to have a preform diameter of a constant 25 mm without any deviation from one end to another end of the preform.

A more important evidence is what he stated in his invention as listed above [A.1.1.2 a-b]. His Figures 1-3 also prove this fact, i.e., his process does not monitor/measure the preform diameter, but uses a preset preform diameter value, such as 25mm."

The optical fiber drawing process is a continuous process as common knowledge. Claim 21 recites: "a drawing process for producing an optical fiber comprising the steps of: measuring ...; heating and melting ...; ... drawing ...." Therefore, the drawing process for producing an optical fiber has its steps claimed in the claim continuous or at least continual as an inherent behavior.

The fact is that Yoshimura did not teach any measuring preform diameter in his process. Furthermore, the fact is that Yoshimura's process, of course, lacks a control principle based on the preform measurement.

3. The A.A. is against the fact and in error by cutting or omitting the complete statement regarding robustness in claim 21 and alleging that "It is largely irrelevant that

robustness is an advantage – because Yoshimura's process is robust (see rejection)."

The Examiner's rejection based on that allegation is wrong because the robustness in face of deviations of the preform is an advantage over Yoshimura.

The A.A. states "A.1.3. It is largely irrelevant that robustness is an advantage – because Yoshimura's process is robust (see rejection.). It may be that applicant's invention is more robust, but such is largely irrelevant because the claims do not require much robustness. For example even if Yoshimura has only 0.01% robustness and applicant's invention has 100% robustness, it is irrelevant because the claims do not require 100% robustness."

Here, the A.A. has a mistake on the robustness specified in Claim 21 and does not recognize knowledge of robustness and its importance in modern control and system areas. Regarding the A.A. comment, applicant recites the robustness clause of Claim 21 again as follows:

> "whereby said optical fiber drawing process will be robustly controlled with robust performance of said process and robust quality of said optical fiber against deviations of the preform outer diameter and shape at different locations and against deviations of various preforms, making a robust diameter-controlled optical fiber".

As 4-7-2005 Remark pointed out, it is clear that the robustness as an advantage the present invention claimed is specified as the robust performance of said process and robust quality of said optical fiber "*against deviations of the preform outer diameter and shape at different locations* and *against deviations of various preforms*, making a robust diameter-controlled optical fiber". This specific robustness is lacked by the prior art including Yoshimura's process and Urruti's process, because their processes lack the preform diameter measurement and a control principle based on the measured preform diameter.

Here, it is clear fact that Yoshimura's process has no this specific robustness, i.e., **0%**, in view of and in face of deviations of the preforms because his invention has no preform measurement and no control principle based on the preform measurement in his process.

It is a clear fact that Yoshimura's process does not have the kind of the claimed robustness in Claim 21. What his process required is a limitation and condition on the preform as he taught as listed above. This *robustness against deviations of the preform outer diameter and shape*

at different locations and *against deviations of various preforms*, making a robust diameter-controlled optical fiber, is new results of the present invention, the advantage of that is urged to warrant issue of a patent over Yoshimura, and Yoshimura in view of Yamamura.

On the other hand, Applicant highly honors and respects Yoshimura's invention by moving the bare fiber diameter monitor position downward. It is a well known fact, how to locate measurement monitor location is a challenging problem, especially in a complex process control, such as an optical fiber drawing process.

At the same time, Applicant again respectfully request the PTO to recognize and honor the present invention patentably distinguished from the prior art.

4. **There is no any teaching, suggestion, or motivation for combining or modifying features of the references. Therefore, the rejection is as being based on hindsight from the piece of the present invention. On the other hand, the present invention does not combine two distinct and separate processes. It is an optical fiber drawing process.**

The A.A. states "A2. Page 7 of the final Office Action clearly points out the motivation for combining Yamamura and Yoshimura. The allegation that the combination was done gratuitously and selectively, does not appear to be relevant; moreover there is no evidence or rationale to support the unfounded allegation. Page 9 of the final Office Action clearly points the motivation for combining Urruti and Yamamura. As to "the significant factors" – this is not understood because it is substantially only claim limitations that matters – not other factors. As to the request for an explanation in accordance with MPEP 706.02: the rejection clearly points out the evidence, namely col. 1, lines 30-53 and col. 2 lines 64-67 of Yamamura."

However, the fact and the evidence is clearly that col.1, lines 30-53 and col. 2 lines 64-67 and col. 3 lines 1-3 of Yamamura in other scope and content do not teach or suggest for combining or modifying features of the references.

Please also do not miss the one whole sentence consisting of col. 2 lines 64-67 and col. 3 lines 1-3, especially col. 3 lines 1-3 is the key part of the sentence. Here, the A.A. again does improper cutting and omission to the sentence, making distortion to the teaching and the fact.

Regarding the A.A. pointed out "the significant factors", applicant can not find where it is from because he can not find this phrase in his 4-7-2005 Remark. However, applicant does state the limitations in his claims that the prior art omitted.

P.7 and P.9 of the final O.A. missed to point out the motivation by a correct and complete citation of the reference teaching. Please see the reference teaching in whole.

Most important is the fact that the Examiner's proposed combination of these two different processes is inoperative and against the reference Yoshimura's operation principle (see 4-7-2005 Reply, p. 24). How can an ordinary skill one in the art would be motivated to do an inoperative combination of these different processes without any suggestion for this combination in these references?

Furthermore, it is a well-known fact that optical fiber manufacturing has two major distinct processes, i.e., the preform manufacturing and the optical fiber drawing. It has been described in book. They are totally separated processes and not combined due to a lot of technical difficulties. Please refer to the prior art as evidence.

Moreover, even as modified or combined in the manner proposed, the resultant teaching still omits one or more of the significant physical features in Claim 21 (see 4-7-2005 Reply, pages 24-25). Thus, these are evidence or rationale to support applicant's statement.

In addition to their specifications, please see the figures of Yoshimura, Urruti and Yamamura processes, and the figures of the present invention, that show the present invention as claimed in claims 21-22, 24-26, 28 and 30-36 patentable over the prior art.

The final O.A. and A.A. fail to show what the examiner's suggested combined process is or looks like from the references teaching or suggestion.

5. **The A.A. wrongly cites *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981) to support examiner's suggested inoperable combination because there is no evidence to claim the resolution supports using an inoperable combination to prove an operable non-combination invention obviousness. However, it really shows that the present invention as claimed is unobvious with new advantages because the examiner suggested**

inoperable combination of teachings of the references against the claimed invention.

The A.A. states "A.3.1. In response to applicant's argument that combining the processes would be inoperable, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981)".

Here the key is that the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

The further important key and fact is that the examiner's suggested combined teachings of the references from two different processes would suggested to those of ordinary skill in the art to make the combining processes inoperable. Thus, it clearly proves that the present invention is unobvious according to that In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981) and according to 35 USC 103. Please refer to section A.1. On the other hand, the cited references do not have any suggestion to modify or combine these two distinct processes.

6. **The A.A. states "A.3.2. The fact that the references have different scope and content is not deemed very relevant." However, it does not follow the MPEP and Office policy – "Office policy is to follow *Graham v. John Deere Co.* in the consideration and determination of obviousness under 35 U.S.C. 103. As quoted above, the four factual inquires enunciated therein as a background for determining obviousness are as follows:**

   (A) Determining the scope and contents of the prior art;

   (B) Ascertaining the differences between the prior art and the claims in issue;

   (C) Resolving the level of ordinary skill in the pertinent art; and

   (D) Evaluating evidence of secondary considerations."

The A.A. states: "A.3.2. The fact that the references have different scope and content is not deemed very relevant. The all are evidence as to what one of ordinary skill in the art would know."

First, the above cited A.A. statement clearly recognizes and acknowledges the fact that the cited reference Yamamura is in different scope and different content from Yoshimura and Urruti and the present invention process – the optical fiber drawing process. Yamamura is in different scope and content for manufacturing glass ingot, at best it related to preform, but not for optical fiber drawing process.

Yamamura's innovation mainly is the control of the temperature distribution within the heating furnace based on his measurement 6a in the furnace above the heating for glass ingot, a different manufacturing process from the fiber drawing process.

Second, the above cited A.A. statement clearly fails to follow both the Office policy and The Supreme Court statement in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966):

> "Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims as issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter to patented. As indicia of obviousness or nonobviousness, these inquires may have relevancy ...
>
> This is not to say, however, that there will not be difficulties in applying the nonobviousness test. What is obvious is not a question upon which there is likely to be uniformity of thought in every given factual context. The difficulties, however, are comparable to those encountered daily by the courts in such frame of reference as negligence and scienter, and should be amenable to case-by-case development. We believe that strict observance of the requirements laid down here will result in that uniformity and definitiveness which Congress called for in the 1952 Act."

7. **Furthermore, it is a well-known and clear fact that optical fiber manufacturing has two major distinct processes, i.e., the preform manufacturing and the optical fiber drawing. They are totally separated processes and not combined due to a lot of technical difficulties. Please refer to the prior art. (A.3.4 of 4-7-2005 Reply, p. 24)**

It is a response not only to the A.A. above statement "The all are evidence as to what one of ordinary skill in the art would know" following the different scope and different content, but also to the A.A. wrong statement "A.3.4. The is incorrect. More importantly, there is no indication as to why this relevant."

The above stated fact is correct that the optical fiber manufacturing has two major distinct processes, i.e., the preform manufacturing and the optical fiber drawing. **They are two different departments for ordinary skill ones in the art and companies.** Examiner fails to give evidence to support his allegation "This is incorrect".

A.3.4 of 4-7-2005 Reply is not only correct and but also directly relevant to point out that the final O.A. suggested combination of Yoshimura or Urruti's optical fiber drawing process and Yamamura's glass ingot, or at best preform, manufacturing process is improper and impractical. The above fact in A.3.4 also shows that the suggested combination is not only against the references teaching and operation principles as stated above, but also against the fact and the ordinary skill knowledge in the art.

8. **A.3.3 of 4-7-2005 Reply (pp. 23-24) states "*Differences between the present invention and Yamamura or Kenmochi*, in addition to the explanation in above A.1.1". A.3.3 has items i) – v). The stated different features of the present invention from the references are claimed in claims, especially in Claim 21.**

The A.A. states "A.3.3. Assuming i)-v) are true, such are not convincing because they are not relevant. Or at least they do not appear to be relevant to examiner because they are directed to features not claimed – and because applicant has not pointed out how they are relevant."

However, the above A.A. statement is not correct because the A.1.1 recites:

"A.1. Claim 21 has substantial physical and manipulative feature differences that significantly distinguish from and are patentable over Yoshimura 5073179.

1. *Yoshimura 5073179 lacks the following substantial manipulative features claimed in Claim 21, as recited as follows:*

i. 'measuring either the outer diameter or shape of a preform';

ii. 'providing a control system with the measured outer diameter or shape of said preform, ... to control said drawing process'; and

iii. 'wherein the control process controls at least one member of the group comprising a feeding speed control of said preform, a drawing speed control of said optical fiber, and a tension control of said optical fiber'."

Then, A.3.3 further to show the references of Yamamura and Kenmochi cited from different processes lack the above claimed different features. Therefore, it is strongly relevant to the final O.A. citing two new references and Yoshimura in view of Yamamura.

9. The A.A. comment on A.3.5 is wrong because the comment is the same as the one on A.3.1 and the error is pointed out in the above item 5. Please refer to the above item 5.

A.3.5. recites: "Moreover, if combined or modified as the final O.A. suggests, their two process control systems would give conflict controls for preform movement, and thus destroy the references and the whole combined process. Thus, it is inoperative and destroys the references".

The A.A. comment on A.3.5 is the same as the one on A.3.1 as listed above in item 5.

The important key and fact is that the examiner's suggested combined teachings of the references from two different processes would suggested to those of ordinary skill in the art to make the combining processes inoperable. Thus, it clearly proves that the present invention is unobvious according to that In re Keller, 642 F.2d 413, 208 USPQ 871 (CCPA 1981) and according to 35 USC 103. Please refer to section A.1. On the other hand, the cited references do not have any suggestion to modify or combine these two distinct processes

10. The A.A. comment on A.3.6 is "See A.1.1. above". Therefore, please see the above section I.1.

A.3.6 recites: "Even as modified or combined in the manner proposed, the resultant teaching still omits one or more of the significant physical features in Claim 21 as follows: ..." by reciting the features in claim 21 (pp. 24-25).

Furthermore, A.3.6 points out that "the fiber drawing process is a large stretch and has dramatic change of its size, totally different from Yamamura glass ingot and Kenmochi preform processes" (p. 25).

As pointed out in above I.1, the A.A. comment on A.3.6 does distort the reference teaching and does not recognize the differences of the present invention claims from the prior art.

11. The rejection to Claim 21-23 is wrong because the final O.A. distorts the reference Yoshimura as clearly pointed out by A.3.7 of 4-7-2005 Reply (pp. 26-27). Please also refer to the above 1.1 – 1.3.

The A.A. states "See the rejection for how this limitation is met. The claims do not preclude a predetermined diameter – in fact the claims require that the diameter is determined. Thus it must be predetermined -relative to- the control. Applicant's invention does not have a post-determined diameter."

Here, examiner fails to recognize the fact and the major difference and limitations of the claims of the present invention from the Yoshimura include: "measuring either the outer diameter or shape of a preform", "providing a control system with the measured outer diameter or shape of said preform, ... wherein the control process controls at least one member of the group comprising: a feeding speed control of said preform, a drawing speed control of said optical fiber, and a tension control of said optical fiber; whereby said optical fiber drawing process will be robustly controlled with robust performance of said process and robust quality of said optical fiber against deviations of the preform outer diameter and shape at different locations and against deviations of various preforms, making a robust diameter-controlled optical fiber" as claimed in Claim 21.

The key is that Yoshimura's process lacks the above recited limitations.

In A.3.7, applicant states:

"Yoshimura clearly does not teach a step of measuring the diameter of preform in his whole specification, including col. 3, lines 30-34.

The final O.A. (p.6) comments that 'Yoshimura does disclose that the fiber diameter does depend upon the preform diameter (col. 3, lines 30-34).'

However, what Yoshimura teaches is clearly as what he states in col. 3, lines 30-39:

> 'the outer diameter of the optical fiber depends on a preform diameter, structural factors of the drawing furnace such as a heating length, a size of the furnace outlet, and a flow rate and a kind of an inert gas. *Thus, the present invention resides in* not only limiting the distance between the outlet or a center of the drawing furnace and the measuring device for the outer diameter *but also, as a whole, limiting such factors described above*'. [emphasis added]

It is to *limit such these factors including the preform diameter changes/deviations.*

Therefore, *Yoshimura does not teach measurement of the outer diameter of the preform to dynamically control the fiber drawing process. The prior art uses a predetermined diameter of the preform in the fiber drawing process.*

From Yoshimura, col. 3, lines 30-39, his teaching is totally different from the present invention. His motivation and control principle are to limit the preform diameter deviation, totally different from the present invention. It is entirely unobvious to measure the preform outer diameter continuously for fiber drawing control in the prior art."

The A.A. insists the error and does not recognize the clear difference of a step of measuring the preform diameter from the references taking a predetermined value for the

preform diameter in stead of measuring. It again shows that the A.A. fails to recognize the truth and the clear factual differences of the subject matter.

12. The Examiner fails to follow MPEP 707.07(f) -- Answer All Material Traversed "Where the applicant traverses any rejection, the examiner should, if he or she repeats the rejection, take note of the applicant's argument and answer the substance of it", because the examiner fails to answer the evidences, rationale or arguments in the remain part of applicant's 4-7-2005 Reply (pp. 26 – 66) and the Examiner states:

"Examiner has reviewed the rest of Applicant's arguments. They are not convincing for substantially the same reasons given above. Namely, the arguments are directed to features that are not required by the claim; or they are based on allegation without any evidence or rationale to support them; or that they are deemed to be irrelevant because applicant has not pointed out why they are relevant and Examiner is not aware of any relevant."

Even though some arguments, rationale or evidences may be similar, they may be supported by different facts, materials and evidences. Furthermore, some arguments, rationale or evidences may certainly be different from those in A.3.1 – A.3.8. The A.A. and final O.A. fail to answer all materials of applicant' arguments or evidences submitted in the two Replies of 10-18-2004 and 4-7-2005, however, that full answer to all material traversed, proposed by applicant, is required by the rules.

For convenience and a brief summary, the followings are just the highlighted items after A.3.7 in 4-7-2005 Reply. Please refer to the Reply (pp. 26–66) for those details and supporting materials, facts and evidences.

A.3.8. "Yamamura clearly does not teach a step of measuring the outer diameter of final glass ingot after inevitable shrinkage in his process. His last measurement 6b of ingot is in furnace 10 as shown in his Figs. 1 and 5."

A.3.9. "It is clear from the above that Yamamura's new measurement within a furnace above heating is used for controlling the heating furnace temperature distribution when "a

measurement of the outer diameter measuring device 6a exceeds a preset value". Further, this measurement is not a preform measurement. Furthermore, his both measurements are within furnace 10. All these are totally different from the present invention as described in the specification and claimed in the claims."

A.3.10. "Moreover, only through hindsight would someone find and combine them with an inoperative combination, because the combined or modified references are from different arts and different scopes, and will destroy each other process if combined."

A.3.11. "The combination would not be robust because the suggested combination would be inoperative and destroy both processes. Robustness of the present invention is specific in the whereby clause of the claims. ... ...

Therefore, from the above items in A.2 and A.3, Claim21 is definitely unobvious as a whole at the time this invention was made to an ordinary skill person in the art."

A.4. "Dependent Claims 22 and 24-25 Are Unobvious and Patentable Over Yoshimura 5073179 and Yamamura 6220057 or Kenmochi 6178778.

Dependent claims 22 and 24-25 incorporate all the subject matter of claim 21 and add additional subject matter which makes them a fortiori and independently patentable over Yoshimura and Yamamura or Kenmochi."

A.4.1. "Claim 22 additionally recites: ....."

A.4.2. "The references lack key feature steps in the claims."

A.4.3. "Claim 24 additionally recites: ... ...".

A.4.4. "Claim 25 additionally recites: ... ...".

A.4.5. "The term 'predetermined allowable bare fiber diameter deviation value' is a calculated and represents a significant limitation".

A.4.6. "One important key is the novel control principle for the feeding speed control in the claims. It is entirely foreign to the prior art. The references lack that."

A.4.7. "Errors in the final O.A. for the fiber drawing process control" ... i) – vi).

A.4.8. "The novel control principle in the present invention is entirely foreign to Yoshimura,

Urruti, Yamamura and Kenmochi, since the reference process and 'control system' do not have a control based on the measured perform diameter or shape, its deviation from a predetermined nominal value, and said nominal value, as claimed in Claims 22 and 24-25 and as discussed in above item 6 [A.4.6]."

"From the above A.2 – A.4, the present invention as claimed by claims 22 and 24-25 is unobvious."

B. "Claims 26 and 28 Distinguish from and Are Patentable over Urruti 5551967 and Yamamura 6220057 or Kenmochi 6178778."

B.1. "Claim 26 has substantial physical and manipulative features that significantly distinguish from and are patentable over Urruti."

B.1.1. "Urruti 5551967 lacks the following features of Claim 26, as recited as follows: ...".

B.1.2. "Urruti does not anticipate the present invention because of his lacking of key features of Claim 26 such as listed above".

B.1.3. "Urruti does not anticipate the present invention claimed in Claim 26, otherwise, he would not have taught that 'The second diameter measurement is made between hermetic coater 54 and protective coater 56' and 'Since the fiber has been hermetically-coated at this point, the technique used for this measurement must be operable in the presence of such a coating' in col. 4, lines 60-66, US 5551967."

B.1.4. "Coated fiber with the carbon is not a 'finished bare fiber' before the coating step, because it is not a bare fiber and because it is not before the coating step".

B.2. "Claim 26 is Unobvious and Patentable Over Urruti 5551967."

B.2.1. "Claim 26 Patentably Differs From Urruti on the basis that there is (1) double outer diameter measurements of the bare fiber after the furnace and prior to coating; and (2) novel control principle using two different measurement data sets of the bare fiber by IDM technique and high accuracy to control the fiber drawing process."

B.2.2. "The Proposed Modification on Urruti by Omitting the Hermetic Coating Destroys the Purpose of Urruti's Invention and Damages the Product Quality of Optical Fiber.

This function is Desired and Required, thus hermetic coating can not be omitted in Urruti

5551967. It further shows that the present invention claimed in Claim 26 is unobvious and patentable. ....

Furthermore, there is no any teaching, suggestion, or motivation for omitting the hermetic coating in Urruti process. Thus, the rejection to Claim 26 is as being hindsight to build a new process with some key features as claimed in the present invention by omitting some required step and function, but at the same time to destroy the reference purpose and to damage the product quality.

Especially, Urruti teaches using a special shadow technique for monitoring this hermetically coated fiber as that 'Since the fiber has been hermetically-coated at this point, the technique used for this measurement must be operable in the presence of such a coating. One suitable approach is the shadow technique employed in the commercial Anritsu monitor.' (col. 4, lines 63-67) ... ...

On the other hand, the present invention also does not propose to omit any Urruti 5551967 coating steps or functions.

Therefore, in all, there is no any basis for citing 'Omission of an Element and its Function is Obvious if the Function of the Element is Not Desired' in view of Urriti.

Moreover, even as modified to omit the hermetic coating as the final O.A. suggested, the measurement technique for the second bare fiber measurement in the present invention is totally different from the shadow technique which Urruti uses. The regular bare fiber measurement technique in the present invention has advantage as Urruti recognized and cited above. This fact also shows that the present invention is unobvious over Urruti."

B.2.3. "Claim 26 provides a distinguished patentable subject matter – a new solution method to a long-felt and long existing problem and a still unsolved need.".

B.2.4. "Urruti Lacks the Claimed Key Physical Features in Claim 26 as listed in B.1.1."

B.2.5. "The Claimed Present Invention is Not Obvious and the Prior Art has No Motivation to Take More Than One Measurement on a Bare Fiber."

B.2.6. "The prior art never recognized or taught twice measurements on the bare fiber as a good solution method to the problem in the fiber drawing process; thus the proposed modification is through hindsight in view of the present invention; and thus the present

invention as a whole is Unobvious."

B.2.7. "The new twice bare fiber measurements produce **new, useful and unexpected results** of providing full high speed, high accuracy measurement data, defect detection needed for the high quality fiber drawing process control, especially when the drawing speed is faster and faster and the preform size is larger and larger. These unexpected results are an important and significant advantage over Urruti 5551967 (col. 2, lines 48-54). Thus, these facts and new unexpected results further prove that the present invention as claimed in Claim 26 is Unobvious.

Urruti had to use Shadow gauge for his second measurement on a coated fiber. In order to measure a coated fiber with a good accuracy, this technique requires 'averaging a series of measurements. The average, however, needs to be made over a period of time on the order of a second which makes this technique unsuitable for the high speed diameter measurements needed for process control' as Urruti recognized (col. 2, 46-51). From Urruti Figs. 2 and 4, it can be observed that his drawing speed is around 8.5~9.9 m/s (1995), and a second delay would damage about 9m fiber quality. A high speed and high accuracy measurement is urgent and critical for a higher speed fiber drawing process.

At the same time, applicant will further point out that his new useful and unobvious method as claimed in Claim 26 produces many advantages, e.g., providing high speed, high accuracy data of the second measurement needed for process control and defect detection, ability to using popular measurement technique over Urruti (refer to Urruti 5551967 Abstract). This also proves that the present invention method claimed in Claim 26 produces new and unexpected good results and hence is unobvious.

Applicant submits that the fact that the present invention in claim 26 is (a) novel, and (b) produces valuable new, useful, and unexpected results proves that it is unobvious."

B.3. "Dependant Claim 28 is Unobvious and Fortiori Patentable Over Urruti 5551967 and Yamamura 6220057 or Kenmochi 6178778".

B.3.1. "There is No Any Teaching, Suggestion, or Motivation for Combining or Modifying Features of the References.

Urruti and Yamamura and Kenmochi Do Not Contain Any Justification to Support Their

Combination or Modification, Much Less in the Manner Proposed.

Therefore, the rejection is as being based on hindsight from the piece of the present invention. On the other hand, the present invention does not combine two distinct and separate processes of preform manufacturing process and fiber drawing process. It is an optical fiber drawing process. Please refer to A.2 (page 20-23)."

B.3.2. "Claim 28 additionally recites: ... ... That is entirely foreign to Urruti, Yamamura and Kenmochi, or any combination."

B.3.3. "Dependent Claim 28 incorporates all the subject matter of Claim 26 and adds additional subject matter which makes it a fortiori and patentable over Urruti."

B.3.4. "Different Scope and Content of the prior art Yamamura and Kenmochi (please refer to A.3.2)."

B.3.5. "Significant differences between Claim 28 and Yamamura or Kenmochi as listed in above B.3.2 and B.1.1, and please refer to B.3.1 and B.3.4."

B.3.6. "It is a well-known and clear fact that fiber manufacturing has two major distinct processes, i.e., the preform manufacturing and the optical fiber drawing. They are totally separated processes and not combined due to a lot of technical difficulties. Please refer to the prior art."

B.3.7. "Moreover, if combined or modified as the final O.A. suggests, their two process control systems would give conflict controls for preform movement, and thus destroy the references and the whole combined processes. ... ... Thus, the proposed combination and modification is inoperative and destroys the intended operation and the both reference processes."

B.3.8. "Even if Urruti and Yamamura or Knemochi were to be combined or modified in the manner proposed, the resultant teaching still omit one or more of the significant physical features in Claim 28 as follows: ...".

B.3.9. "Yamamura does not teach measuring the outer diameter of final glass ingot after inevitable shrinkage. His last measurement of ingot is in furnace 10 of Figs. 1 and 5.

The final O.A. (p.9) rejects claim 28 by Urruti in view of Yamamura ... ...

However, please refer to above A.3.8-3.9 to see the citation from Yamamura and comments on the proposed modification. The facts clearly show that even as modified by using Yamamura to Urruti, the resultant teaching still lacks the major steps and features in Claims 28-34, e.g., measuring final preform diameter after its inevitable shrinkage, dynamically controlling a preform feeding speed and a fiber drawing speed based on the measured preform diameter, etc. Also, please see 6a, 13 and 1a, 1b and 1c in Fig. 1 and col. 1-2 of Yamamura to observe his differences and his missing significant features of the present invention. It is clear from the above listed reasons that the above final O.A. comment is lack of reasonable basis."

B.3.10. "Moreover, only through hindsight would someone find and combine them with an inoperative combination and destroy to each other process. The modification would still omit more of applicant's claimed features. These facts further prove that the present invention as claimed is unobvious."

C. "Claims 30-34 Distinguish from and Are Patentable over Urruti 5551967 and Yamamura 6220057 or Kenmochi 6178778".

C.1. "There is No Any Teaching, Suggestion, or Motivation for Combining or Modifying Features of the References. Therefore, the rejection is as being based on hindsight from the piece of the present invention.

Urruti and Yoshimura and Yamamura and Kenmochi Do Not Contain Any Justification to Support Their Combination or Modification, Much Less in the Manner Proposed. Please further refer to A.2 (pages 20-23)."

Please also refer to the above item 4.

C.2. "Claim 30 is Unobvious and are Patentable Over Urruti and Yamamura or Kenmochi".

C2.1. "Claim 30 Patentably Differs from Urruti and Yamamura and Kenmochi on the basis that there is (1) outer diameter measurement of preform prior to entering furnace; (2) novel control principle by utilizing preform measurement to control the preform feeding speed and fiber drawing speed. The references lack one or more of these significant features as applicant claimed."

C.2.2. "Claim 28 is unobvious over the prior art as stated in B.3. Thus, there is no basis to reject Claim 30 for the same reason as claim 28."

C.2.3. "Different Scope and Content of the prior art Yamamura and Kenmochi."

C.2.4. "It is a well-known and clear fact that fiber manufacturing has two major distinct processes, i.e., the preform manufacturing and the optical fiber drawing. They are totally separated processes and not combined due to a lot of technical difficulties. Please refer to the prior art."

C.2.5. "Yamamura does not teach a step of measuring the outer diameter of final glass ingot after inevitable shrinkage in his process. Please refer to B.3.9 and A.3.8."

C.2.6. "Moreover, if combined or modified as the final O.A. suggests, their two process control systems would give conflict controls for preform movement, and thus destroy the references and the whole combined processes." (Please see B.3.7 and A.3.5)

C.2.7. "Even as modified or combined in the proposed manner for Urruti with Yamamura or Knemochi, and even further assumed the combination or modification workable, the resultant teaching still omit one or more of the significant physical features in Claim 30 as recited below: ... .

More important is that the control principle and method of the present invention is entirely foreign to Yamamura, Urruti, Yoshimura and Kenmochi, or any combination thereof, since the systems of these references do not use the preform measurement to control preform feeding speed and fiber drawing speed, furthermore, and the novel control principle as claimed in claims 30-34 for the control."

"Therefore Claim 30 is Unobvious over the prior art from above C.1 and C2."

C.3. "Dependant Claims 31-34 Are A Fortiori, Unobvious and Patentable Over the Prior Art including Urruti and Yamamura and Kenmochi.

Dependant claims 31-34 incorporate all the subject matter of claim 30 and add additional subject matter which makes them a fortiori and independently patentable."

C.3.1. "There is no basis to reject Claims 31-34 for the same reasons to Claim 28 because Claim 28 is unobvious over the prior art as stated in B.3."

C.3.2. "Claim 31 additionally recites: ... ...".

C.3.3. "Claim 32 additionally recites: ... ... These physical features are novel, useful and unobvious over the references."

C.3.4. "Claim 33 additionally to Claim 32 recites: ... ...

These specific features claim the novel, useful and unobvious control principle that are disclosed in the specification of the present invention, and are entirely foreign to Urruti, Yamamura, Yoshimura and Kenmochi, or any combination thereof. It is specific limitations of control algorithm."

C.3.5. "Claim 34 additionally to Claim 33 recites: ... ... This additional feature is new, useful and unobvious over the prior art to against time-lag and time-lead of the measurements."

C.3.6. "The term "base on" is a valid term and introduces specific calculations and limitations in the claims. This term has also been widely and well used in many claims of other patents, including Yoshimura 5073179 and Kenmochi 6178778.

The final O.A. (p.10) states 'As to the limitations that refer to the control being 'based on' diameters, deviations, etc. Such is inherent. Everything is inherently 'based on' everything else. For example the control has to be based on each of the diameters because the amount of mass of the glass is based on the diameter, and the heat capacity is based on the amount mass, and the temperature would be based on the heat capacity. (a 2 cm diameter preform would have 4 times the mass as a 1 cm preform, and thus would need 4 times the total heat, and ¼ the feed rate. Every parameter essentially is inherently 'based on' every other parameter.'

However, this statement is incorrect because Such Is Not Inherent.

For the given example, it should be also noticed that to determine the preform mass only by the diameter is not enough. Furthermore, regarding the given example, people would like to ask the following questions:

What should be based on, 'the amount of mass', or weight, or 'diameters', or 'deviations', or 'everything else'? Which one?

What is to be controlled based on 'everything else', the furnace temperature distribution, or the drawing speed, or the feeding speed, or 'everything else'?

What is control law or rule, i.e., principle in the process control, or 'everything else'?

IT IS TOTALLY NOT INHERENT.

Control engineers need to do deep investigation and face challenging problems, e.g., in this complex optical fiber drawing process control in order to answer these questions. Different solutions may make totally different process control methods.

The present invention discloses the novel, useful and unobvious optical fiber drawing control methods in the specification and claimed in Claims 30-34.

If it were inherent, the cited references patents would not have been issued as published. This incorrect statement would reject these issued and cited reference patents.

However, Applicant highly honors these cited patents because it is not obvious and not inherent. They teach different measurements and make different controls. Applicant also discloses and claims different new, useful and unobvious measurement methods, control methods and control principles over the prior art.

Here the important key is to identify what is based on. It is entirely not inherent.

One example can show how important and different it will be for what to be based on. Yoshimura 5073179, claim 1 claims '... the drawing being carried out at a drawing rate that is controlled based on a deviation of the measured diameter from a preselected outer diameter' [emphasis added]. Because it is based on a deviation, then a comparison operator (Fig. 2, Yoshimura) is needed, and a subtraction operation on the measurement from a preslected diameter is executed. If it were based on the measured diameter, then that comparison operator would not be needed and that subtraction operation would not be executed. This example clearly shows that the term 'based on' or what to be based on is not inherent, but introduces significantly different calculations and limitations.

Really, the phrase 'based on' introduces a specific control law or regulation for a control system and a control process. What to be based on for a control and what to be controlled based on that are very important issues in automatic control area, including process control, especially for very complex processes including optical fiber drawing process.

Claims 31 and 33 claim 'said control signals are further based on the measured preform diameter and the preselected nominal diameter in addition to the preform diameter deviation'. This novel, useful and unobvious control law, as disclosed in the specification of the present invention, is totally different from the conventional selection of a deviation only. It Is Not Inherent. This claimed phrase 'based on' defines that the control signals are generated by computation on not only the preform diameter deviation ΔD, but also the measured preform diameter $D + \Delta D$ and the preselected nominal diameter D. It is not only a computation on the deviation ΔD. Thus, the claimed phrase "based on" clearly defines a novel, useful and unobvious limitation over the prior art, so that the claim distinguishes from and is patentable over the prior art.

Applicant therefore respectfully submits that the rejection to Claims 30-34 and others based on the above O.A. statement is improper and should be withdrawn since these claims are 'based on' their patentable distinguished limitations respectively."

C.3.7. "Claim 34 has been amended by deleting 'fluctuation data from the current measurements and' and adding 'of the preform and the bare fiber being drawn' to clarify 'historical' measurement data and to overcome the rejection."

"In claim 34, the 'historical measurement data' is really time lead or lag measurement of the outer diameters as the fiber is being drawn and not history of drawing separate preforms. It is used for benefit, as stated in the claim as:

> 'whereby the process control provides robust performance of the drawing process and robust quality of the fiber further against the fluctuations of the diameters, *time-lag and time-lead of said measurements corresponding to the heating and melting stage*, and environment fluctuations of the heating and melting'."

"It is not related to taking extra routine experiments on other preforms. It is related to measuring the preform and its fiber which is being drawn."

D. "Response to 'Response to Arguments' of the final O.A."

D.1. "Applicant's last response and arguments are valid in view of the facts and III.A-C".

D.2. "Applicant's invention having twice bare fiber measurements in the optical fiber drawing process are novel, unique, useful and unobvious over Urruti, and produce unexpected results.

The final O.A. states that 'As to the arguments that Urruti has only one measurement between the coated and the draw furnace, see the above rejection which points out how both the Urruti measurements can be considered to be a 'bare fiber'. Furthermore see the rejection which indicates it would have been obvious to remove the first coater of Urruti if one didn't want the hermetic coating.'

However, regarding 'bare fiber' please refer to above I.6, III.B.1.2 and B.1.4. The fact is that 'bare fiber' is well described in Yoshimura, Urruti and Applicant in a same and common way. 'Bare fiber' recited in Claims 26-29, 32-34 is a term of art in US 5073179 and 5551967 and it is clearly described and shown as 5 in figs. 1-10 of the application.

Furthermore, please refer to III.B.2.2 to see that **to remove the first coater destroys Urruti's process purpose and damages the product quality, causing a detrimental phenomenon – stress corrosion, static fatigue, and further bonds to break down and spontaneous fractures. This function is Desired and Required, thus it can not be omitted**.

Urruti's second measurement is clearly not on a bare fiber. His measurement had to apply a shadow technique for this measurement of coated fiber. More important is as stated in III.B.2.7 and B.2.3, **the new twice bare fiber measurements produce new, useful and unexpected results of providing full high speed, high accuracy measurement data, defect detection needed for high speed and high quality fiber drawing process control."**

D.3. "The present invention patentably differs from the prior art including Urruti by the claimed distinguished physical features.

The final O.A. states 'Most important, Urruti discloses the same concept that applicant has: measuring at more than one location to get better control of the diameter controlling process.'

However, the fact is that Yoshimura, Urruti and Applicant Invent Different Concepts respectively to solve a long-felt and long existing problem and still unsolved need.

The present invention provides more new distinguished unobvious methods to solving more

problems in fiber drawing process.

Most important concepts and issues are not only how many measuring locations, but also how to identify:

a. what to be measured;

b. where to be measured;

c. what related technique to be used for the measurement, popular or not;

d. how to utilize the measurement;

e. what to be controlled;

f. how to control, i.e., based on what; and

g. what to be the novel control principle and method as a whole.

This issue is the invention and key concepts in the present invention that patentably differs from Urruti's.

Thus, it is clear that the **above final O.A. statement to reject the present invention is incorrect, and omits the most important key concepts, and doesn't recognize the important differences about the above listed concepts and issues between applicant and the prior art, including Urruti**. Please especially refer to above II, III.A.2 and III.B to see claimed patentable physical features of the present invention over Urruti.

It is not obvious and no motivation to take more than one measurement of the bare fiber prior to the present invention. Otherwise, it would have been taught or mentioned by either Yoshimura or Urruti for this long-felt and long existing problem by using the same important concept of the final O.A.

If the most important concept of Urruti and the present invention were the same, there would not have the above mentioned unexpected results and benefit produced by the present invention. How to explain these unexpected results as listed in III.B.7 and B.3?

If that statement had been used for rejection, people would not have had Kenmochi invention. How to explain Kenmochi 6178778 (2001) after Urruti 5551967 (1996)? The above O.A. statement does not recognize the difference and important issues in measuring area and control area.

Thus, applicant respectfully request that this rejection should be withdrawn."

D.4. "Error is the concept that 'with any process, the more locations the product is monitored, the better the final product would be' in the final O.A.

The final O.A. states

'Examiner wish also to point out Kenmochi 6178778 which teaches drawing and measuring the diameter at 'at least locations'. Monitoring the diameter at multiple positions would typically not an invention – because it is merely repeating the same concept.

From MPEP 2144.04 B. Duplication of Parts In re Harza, 274 F .2d 669, 124 USPQ 378 (CCPA 1960) .....

Using the above case law: duplicating a fiber diameter sensor 'has no patentable significance' – applicant has not demonstrated any unexpected results. One would expect better control by having more sensors. With any process, the more locations the product is monitored, the better the final product would be.'

However, the above statement is incorrect and against the knowledge and principles of automatic control and engineering as described below.

First, it is incorrect because the present invention is totally not a case of 'Duplication of Parts'. The reasons are as follows:

a. The concept of 'the more, the better' as claimed in the final O.A. is incorrect and not valid for measuring in a process control system as explained below, thus there is no any ground to claim 'Duplication of Parts' here.

b. It does not recognize the importance and difference of different monitor locations.

c. Yoshimura just moved one monitor location downward and that was patented in 1991 by using one monitor after CCPA 1960.

d. Urruti (1996) used two monitors and Kenmochi (2001) used two monitors after CCPA 1960. If one followed the above final O.A. concept, Urruti's second measurement would be duplicating a sensor and his invention would be rejected, so would Kenmochi. However, they are not duplication. These were patented.

e. Duplication of parts is valid only for the same parts and they are duplicated, as well as

satisfying the final O.A. concept 'the more, the better' in function.

f. The key is that the above statement does not recognize the different objects or different statuses that are being measured and monitored by different sensors.

g. The statement does not recognize that the present invention sensors are taking their different tasks respectively in the measuring system and the whole control system!

h. They are totally not a duplication of parts because they are taking different tasks and responsibilities and monitoring different objects or statuses respectively.

Second, as pointed out in sections II and III.A-C, Kenmochi is in different scope, area and content, and lacks the key features in the claims of the present invention.

Third, the most important is that the above concept that 'with any process, the more locations the product is monitored, the better the final product would be' in the final O.A. is incorrect for the following reasons:

i. Only monitoring will not improve the product and will not get the better product. It may observe and find more defect information, but will not solve it by more monitoring itself.

ii. The better product must be through better control method and system, not by only more monitors.

iii. Monitoring is just monitoring, just observing the process. The manufacturing process control is not a pure monitoring system, but a control system. Thus, the concept 'With any process, the more locations the product is monitored, the better the final product would be' is wrong.

iv. Even assume that more monitoring would connect with a control system for a product process control, the above concept that 'with any process, the more locations the product is monitored, the better the final product would be' is still incorrect for the following reasons.

v. Let's assume that the data from the above more monitoring locations are input to a control system to control the product quality. A big question and a disaster difficulty is how the control system can handle the more and more data from the more and more

monitoring locations dynamically and make a correct command/decision in a limited time for a real-time process control.

vi. No control system can handle a 'data sea' in a required short time period to make an on-line real-time correct action.

vii. Even, to take a simple average calculation on such large amount of data, 'data sea', from more and more monitoring locations will also fail for a reasonable controller in a reasonable short time period for reasonably controlling any dynamic process.

viii. Another simple question is: how does one store or arrange the measured/measuring data ('data sea') from more and more monitoring locations for further treatment? What kind size of computer does one need for it? No amount of hardware advances will overcome this conceptual fundamental impossibility.

ix. How long of time does one need to treat one cycle of data from all monitoring locations that are more and more? There is even more evidence that striving for more and more monitors in control system may lead to nonoptimality and even wrong decision.

x. Thus, it is clear that the concept that 'the more locations the product is monitored, the better the final product would be' is incorrect.

xi. Therefore, present invention regarding monitoring and control of optical fiber drawing process is totally not a case of duplication of parts because the above concept does not work for a monitoring and control system.

xii. On the other hand, the more and more monitors would also be uneconomical utilization of resources.

xiii. It is clear that some monitoring locations are not necessary and may be not useful.

xiv. Thus, what is an optimal monitoring system in a control system? Where are optimal monitoring locations? What is a best suitable control law in a complex control system? These problems are still the open and challenging problems in complex control systems, e.g., the well-recognized complex optical fiber drawing process.

xv. It is not a case of duplication. Duplication is simple and is not an open problem, but just duplication.

xvi. The important issues are different measurement/sensor locations, different measurement objects, different feedback approaches, i.e., different controlling objects based on different measurement data sets from different locations, furthermore, different control algorithms and principles.

xvii. The above final O.A. statement is also against the practice of a series of issued patents including US 5073179 (Yoshimura), 5551967 (Urruti), 6178778 (Kenmochi) and 6220057 (Yamamura).

Accordingly, applicant respectfully submits that the rejection on this statement and these references is improper and should be withdrawn."

D.5. "Yoshimura 5073179 and Urruti 5443610 (a parent patent of Urruti 5551967) have been discussed in the specification of the present invention which distinguishes from and is patentable over the references."

D.6. "A Substantial Feature Comparison Table is attached to show differences." [Please see the attached copy in 4-7-2005 Reply]

D.7. "Moreover, claimed new features make new and unexpected results as follows:

a. robustness to control the required bare fiber diameter against various disturbances, perturbations and deviations of the preform and preforms;

b. solving time-lead and time-lag measurement problem;

c. providing high speed, high accuracy data of the second measurement of bare fiber needed for high speed fiber drawing process control and defect detection over Urruti's shadow gauge; and

d. reducing the processing time of Urruti."

D.8. "New Principles of Operation and Control in the fiber drawing process are claimed."

D.9. "A series of issued patents as cited references further prove that different measurements in a large complex process and control are challenging and unobvious to a person having ordinary skill in the art.

Applicant honors these references. At the same time, applicant respectfully requests the PTO to recognize his novel, useful and unobvious invention as claimed."

D.10. "The Invention is Unobvious from the fact in view of lack of implementation.

If the invention were in fact obvious, because of its advantages as also recognized in the final O.A. by suggested combination and modification, those skilled in the art surely would have implemented it early. That is – the fact that those skilled in the art had not and have not implemented the invention, despite its great advantages, indicates that it is not obvious."

D.11. "Professional Recognition– The invention has been given an award and recognition by the University of North Carolina at Charlotte." [Please see the attached copy in 4-7-2005 Reply]

D.12. "Competitive Recognition – Recently, some foreign (and non-China) company filed a patent application in China, the content of that is basically similar and close to this present invention as they recognized. They have read and checked the applicant's this patent application in China, for that the applicant applied as an international patent application in 2002 following the US PTO permission notice to this US patent application." [Please see the attached copy in 4-7-2005 Reply]

D.13. "Some Foreign Company Intended to Purchase the Present Invention and Application, as a factor as the U.S. Supreme Court has ruled for certain 'secondary considerations'.

An agent company contacted the applicant on behalf of that foreign company, and said that foreign company had intended to purchase the present invention and application of the applicant." [Please see the attached copy in 4-7-2005 Reply]

D.14. "The above facts including the factual evidence of 'secondary considerations' are submitted together with arguments listed above for requesting reconsideration."

II. Dependant Claims 22, 32 and 35-36 Distinguish From and Are Patentable Over the Prior Art

1. Dependent Claim 22 is a fortiori, unobvious and patentable over the prior art including Yoshimura and Yamamura and Kenmochi.

As stated in III.A of 4-7-2005 Reply, independent Claim 21 distinguishes from and is patentable over the prior art including Yoshimura and Yamamura or Kenmochi. Please refer to III.A.1, A.2, A.3, (pp. 17-29 of 4-7-2005) and the above sections I.1 – I.11 (pp. 12-26).

Here, Claim 22 has been amended further to make the claim clearer by the following marked amendment:

"The drawing process as claimed in claim 21, wherein the measurement of said preform outer diameter or shape is on-line ~~as a preferred method~~ by a measurement monitor device;

the measured diameter or shape is on-line real-time fed to said control system; and

said control system generates a control signal based on the measured preform diameter or shape, its deviation from the predetermined nominal preform value, and said nominal preform value,

for controlling said process in face of the deviations of the preform diameters or shape."

Dependent claim 22 incorporates all the subject matter of claim 21 and adds additional subject matter which makes it a fortiori and independently patentable over Yoshimura and Yamamura or Kenmochi.

As III.A.4.1–A.4.2 (pp. 29–30) stated, even as modified or combined, the resultant teaching still *further* omits one important feature in Claim 22, such as said "control system generates a control signal based on the measured preform diameter or shape, its deviation from the predetermined nominal preform value, and said nominal preform value". Additionally, the final O.A. is in error to select different scope and content reference Yamamura and to propose the combination, which however is unsatisfactory to its intended purpose, and against the operation principle of the primary reference Yoshimura, and also inoperative.

2. Dependent Claim 32 incorporates all the subject matter of Claim 30 and adds additional subject matter which makes it a fortiori and independently patentable over the prior art including Urruti and Yamamura and Kenmochi.

As stated in III.C of 4-7-2005 Reply, independent Claim 30 distinguishes from and is patentable over the prior art including Urruti and Yamamura or Kenmochi.

Here, the current amendment is very limited as marked to clarify the claim further:

> "said control signals are further based on this second bare fiber diameter deviation, thus said control signals are based on the second bare fiber diameter deviation ~~of the measured second (final) diameter of the bare fiber coming into the coating device from the preselected second nominal fiber diameter value~~, the deviation of the measured first diameter of the bare fiber ~~leaving out the furnace~~ by the first bare fiber measurement device from the preselected first nominal fiber diameter value, and the deviation of the measured outer diameter of the preform ~~coming into the furnace~~ from the preselected nominal preform diameter value"

Thus, please refer to sections III.C.1-C.3 of 4-7-2005 Reply related to Claim 30 and previous Claim 32. Dependent claim 32 incorporates all the subject matter of claim 30 and adds additional subject matter which makes it a fortiori and independently patentable over the prior art including Urruti and Yamamura and Kenmochi. The claimed new patentable features include the second bare fiber measurement, the control signals which are based on the above cited new principle.

3. Dependant Claim 35 is a fortiori, unobvious and patentable over the prior art including Urruti and Yamamura and Kenmochi.

As stated above, Claim 32 distinguishes from and is patentable over the prior art including Urruti and Yamamura or Kenmochi. Also, please refer to III.C.1, C.2.1 – C.2.7, C.3.3 of 4-7-2004 Reply (pp. 46–49).

Claim 35 additionally to Claim 32 recites:

> "said control signals are further based on the measured preform diameter and the

preselected nominal diameter in addition to the preform diameter deviation; ...".

These specific features claim the novel, useful and unobvious control principle that are disclosed in the specification of the present invention, and are entirely foreign to the prior art including Urruti, Yamamura, Yoshimura and Kenmochi, or any combination thereof.

It is specific limitations of control algorithm, i.e., the process control is based on not only the preform diameter deviation, but also measured preform diameter and preselected nominal diameter, in addition to the first bare fiber diameter deviation and the second bare fiber diameter deviation.

Dependent claim 35 incorporates all the subject matter of claim 32 and adds additional subject matter which makes it a fortiori and independently patentable over the prior art including Urruti and Yamamura and Kenmochi.

Additionally, the final O.A. is in error to select different scope and content reference Yamamura and to propose the combination, which however is inoperative and unsatisfactory to its intended purpose, and destroy both processes and the product optical fiber quality, i.e., against the prior art purpose.

4. Dependant Claim 36 is a fortiori, unobvious and patentable over the prior art including Urruti and Yamamura and Kenmochi.

Similarly to Claim 34, Claim 36 additionally to Claim 35 recites:

"The control method as claimed in Claim 35, wherein the control signals are further based on historical measurement data of the preform and the bare fiber being drawn over a period;

whereby the process control provides robust performance of the drawing process and robust quality of the fiber further against the fluctuations of the diameters, time-lag and time-lead of said measurements corresponding to the heating and melting stage, and environment fluctuations of the heating and melting."

This additional feature is new, useful and unobvious over the prior art to against time-lag and time-lead of the measurements. Thus, claim 36 is patentable over the prior art.

III. Further Rebuttal and Arguments to the Final Office Action of 2-14-2005 and Advisory Action of 4-18-2005

1. **The final O.A. and the A.A. are lack of determining the scope and contents of the prior art by citing Yamamura 6220057 (2001) which relates to different process for manufacturing glass ingot, and not fiber, at best it relates to preform. It is in different scope and content.**

   The A.A. states "The fact that the references have different scope and content is not deemed very relevant. The all are evidence as to what one of ordinary skill in the art would know." The A.A. recognizes the fact that the references have different scope and content, though the A.A. deems this fact not very relevant. However, determining the scope and content of the prior art is very important and relevant. Please further refer to the above I.6.

   On the other hand, the present invention was initially submitted as a provision Patent Application No. 60/250,962 with a filing date of December 4, 2000.

   As stated above, it is a well-known and clear fact that optical fiber manufacturing has two major distinct processes, i.e., the preform manufacturing and the optical fiber drawing. They are totally separated processes and not combined due to a lot of technical difficulties. Please refer to the prior art. They are two different departments for ordinary skill ones in the art and companies.

2. **The references of Yoshimura or Urruti in view of Yamamura or Kenmochi do not suggest any combination; and even if combined or modified as the final O.A. suggested, their two combined processes would be inoperative and destroy both processes, and against the reference principles and objectives. Thus, the final O.A. does not comply with the MPEP 2141 as cited below, and the rejection based on the proposed references combination is not justified and should be withdrawn.**

   MPEP 2141 **BASIC CONSIDERATIONS WHICH APPLY TO OBVIOUSNESS REJECTIONS**

   When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

   (A) The claimed invention must be considered as a whole;

   (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;

(C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and

(D) Reasonable expectation of success is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

However, the final O.A. fails to comply with the above rules as shown below.

The final O.A. fails to consider the references as a whole, but just cut words or phrases from sentences to make his assumption. The references do not have any suggestion and desirability for combination. The Examiner's cited lines of the references do not teach or suggest any combination. The fact is that Yoshimura clearly states "..... but also, as a whole, limiting such factors described above" including "a preform diameter, structural factors of the drawing furnace such as a heating length, a size of the furnace outlet, and a flow rate and a kind of an inert gas" (see col.3, lines 30-39 which is recited in A.3.7, p.26). His teaching clearly would not suggest an ordinary skill in the art to do the final O.A. proposed combination, but clearly suggested to limit such factors.

The final O.A. fails to comply with that "the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention". The facts are that (1) Yoshimura and Urruti do not teach or suggest any measurement of the preform in the optical fiber drawing process control, and any combination with the preform manufacturing process; (2) Yamamura and Kenmochi are in different scope and content from Yoshimura and Urruti and Applicant; (3) Examiner suggests a combination that lacks any references suggestion or motivation; (4) the suggested combination still omits one or more of applicant's claimed features as pointed out above; and (5) the suggested combination is inoperative.

By suggesting an inoperative combination, the final O.A. fails to comply with that "Reasonable expectation of success is the standard with which obviousness is determined". There is no any reasonable expectation of success because the suggested combination is inoperative, destroys both the preform manufacturing process and the fiber drawing process, and is against the reference invention goals of fast drawing and operation principles.

The rejections based on that should be withdrawn.

3. **The final O.A. fails to establish a *prima facie* case of obviousness because the proposed combination is inoperative, destroys the both references processes, and still misses the**

applicant's claimed key steps. Moreover, the proposed combination case of Yoshimura in view of Yamamura or Urruti in view of Yamamura does not meet all three basic criteria as required by MPEP 2142.

MPEP 2142 ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

As pointed out, there is no suggestion or motivation to modify or combine the references teachings in the references themselves or in the knowledge generally available to one of ordinary skill in the art. Also, please refer to A.3.1 and A.3.4 of 4-7-2005 Reply.

Second, the final O.A. suggested combination will not be a reasonable expectation of success because the combination is inoperative and destroys both processes. (see A.3.5)

Third, when combined, the resultant references teachings still do not teach or suggest all the claim limitations. Please refer to A.3.6–3.8.

Thus, examiner has not established a *prima facie* case of obviousness because the final O.A. fails to meet three basic criteria that must be met as MPEP 2142 states.

Furthermore, the A.A. and the final O.A. do not follow MPEP 2143.03 because, even as modified or combined of Yoshimura in view of Yamamura or Urruti in view of Yamamura, the resultant teachings still omit one or more of applicant's claimed features as listed in 4-7-2005 Reply, e.g., A.3.6–3.9 for Claim 21, A.4.1–4.2 for claim 22, A.4.3 for claim 24, A.4.4 and A.4.6 for claim 25, A.4.8 for claims 22 and 24-25, B.1.1 and B.2.1 for claim 26, B.3.8–3.9 for claim 28, C.2.7 for claim 30, and C.2.2–C.2.5 for claims 31–34 respectively.

MPEP 2143.03 All Claim Limitations Must Be Taught or Suggested

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).

As above pointed out, the prior art, including Yoshimura and Urruti as well Yamamura and Kenmochi, have no any teaching or suggestion for measuring the preform of the optical fiber not-in-the-furnace in the fiber drawing process as claimed in independent Claims 21 and 30; and no any teaching or suggestion for the applicant's claimed double outer diameter measurements of the bare fiber after the furnace and prior to coating in Claim 26.

Thus, based on *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974), the examiner has not establish *prima facie* obviousness of a claimed invention.

Therefore, applicant submits that the rejections on these references are improper and should be withdrawn.

4. **The rejections are in error because the final O.A. fails to consider the prior art in its entirety, including disclosures that teach away from the claims. Furthermore, the rejections are improper because the final O.A. combines the references Yoshimura and Yamamura or Urruti and Yamamura where the references teach away from their combination.**

As pointed out above, the teaching and suggestion of Yoshimura is clearly to limit the factors including preform diameter as a condition, and has no any suggestion or motivation of measuring preform diameter in his fiber drawing process (refer to Yoshimura col.3, lines 30-39).

In col. 3, lines 34-39, Yoshimura taught that "Thus, the present invention resides in not only limiting the distance between the outlet or a center of the drawing furnace and the measuring device for the outer diameter but also, as a whole, limiting such factors described above." The limiting factors described above include the preform diameter!

However, the final O.A. cites only col.3, lines 30-34 of Yoshimura, but intentionally or obviously omits the important remaining lines 34-39 of the teaching. This kind of action is an error, against the truth, and not a scientific attitude for examining.

It is an important fact that the omitted lines 34-39 teach away from claims 21-22, 24-25, 28 and 30-36 of the present invention. Thus, it is clear that the final O.A. fails to consider Yoshimura in its entirety, including disclosures that teaches away from the claims.

Furthermore, the final O.A. (p. 5) cites col. 4, line 41 of Yoshimura as "the preform had a

diameter of 25 mm". Line 41 should read "Outer diameter of preform 25 mm". However, the more important fact is that the final O.A. again intentionally or at least obviously omits the leading part of a paragraph sentence consisting of lines 37–44 in col. 4. The lines 37-41 recite: "Other conditions were as follows: Outer diameter of preform 25 mm". The important part "Other conditions were as follows:" has been omitted and has been not considered in the final O.A. This omitted part clearly teaches away from the claims of the present invention.

The above fact that the final O.A. omits the remaining and connecting lines of the reference teaching clearly shows that the final O.A. violates the **MPEP 2141.02**

> **PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS**
>
> A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

Moreover, the examiner again cuts a sentence to omit col. 3, lines 1-3 of Yamamura when he cites col. 2 lines 64-67 of Yamamura for making the rejections in the final O.A. (p. 7). The cited col.2, lines 64-67 are:

> "On the other hand, when the tapered portion of the ingot is drawn in case where a variation of a measurement of the outer diameter measuring device 6a exceeds a preset value, the heaters of the".

However, it is clearly not a full sentence. Its remaining part is lines 1-3 in col. 3 and the important part of the cited sentence. The full sentence recites as follows:

> "On the other hand, when the tapered portion of the ingot is drawn in case where a variation of a measurement of the outer diameter measuring device 6a exceeds a preset value, the heaters of the heating means 1a to 1c are controlled in their output power so that the temperature distribution is in the state shown in (b) of FIG. 2b." [emphasis added]

Here, applicant points out that the above omitting part in the final O.A. citation is clearly an important part of Yamamura's teaching and an important key, because it is the invention part

of Yamamura, and furthermore because it does clearly show Yamamura's teaching away from the claims. Please see Yamamura's Fig.2 and Fig. 1. Also, please see applicant's figures and claims and 4-7-2005 Reply A.1 – A.3, especially A.3.8 (pp. 26-27).

The above fact shows that the final O.A. again violates the MPEP 2141.02 PRIOR ART MUST BE CONSIDERED IN ITS ENTIRETY, INCLUDING DISCLOSURES THAT TEACH AWAY FROM THE CLAIMS "A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984)."

Thus, applicant submits that the rejections on these references are in error and should be withdrawn.

Furthermore, the final O.A. does not follow MPEP 2145 X.D.2 because the final O.A. combines Yoshimura and Yamamura, or Urruti and Yamamura, where the references teach away from their combination in view of the facts that they are in different scope and contents, they are different manufacturing processes, they do not teach or suggest any their combination, and the combination destroys both combined processes. **MPEP 2145 X.D.2 states:**

> **References Cannot Be Combined Where Reference Teaches Away from Their Combination**
>
> It is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983).

Thus, applicant submits that the rejections on these references combination are improper and should be withdrawn.

5. **The rejections are in error because the O.A. fails to ascertain and recognize differences between the prior art and the claimed inventions as A.3.6 – 3.8 pointed out. Even as modified or combined in the manner proposed, the resultant teachings still omit one or more of the significant physical features in Claim 21:**

   i. "measuring either the outer diameter or shape of a preform" out the furnace after inevitable shrinkage;

   ii. "providing a control system with the measured outer diameter or shape of said

preform ... to control said drawing process" in the fiber drawing process;

iii. "wherein the control process controls at least one member of the group comprising: a feeding speed control of said preform, a drawing speed control of said optical fiber, and a tension control of said optical fiber", utilizing the measured outer diameter or shape of said preform, in addition to a predetermined nominal preform value .

On the other hand, the understanding and expectations of Yoshimura is to limit the factors including preform diameter as a condition without any suggestion or motivation of measuring preform diameter in his fiber drawing process (col.3, lines 30-39).

The understanding and expectations of Yamamura is to control the *temperature distribution in the furnace* based on measurement 6a in the furnace that is totally not the preform diameter measurement for glass ingot manufacturing, not a fiber drawing process, at best a preform manufacturing process.

Furthermore, the examiner's suggested combination for two totally different processes in different scope and content would destroy the both processes. The preform manufacturing process and the fiber drawing process are totally two distinct and separated manufacturing processes as described in book and articles. Please refer to the prior art. Thus, there is no any suggestion or motivation to combine them from either the teachings or the knowledge to those of ordinary skill in the art.

Moreover, claimed new features make new and useful results, as well as some unexpected results, as follows:

a. robustness to control the required bare fiber diameter against various disturbances, perturbations and deviations of the preform and preforms;

b. solving time-lead and time-lag measurement problem;

c. providing high speed, high accuracy data of the second measurement of bare fiber needed for high speed fiber drawing process control and defect detection over Urruti's shadow gauge; and

d. reducing the processing time of Urruti

Therefore, it is very clear that the insight is contrary to the understanding and expectation of the art.

Therefore, based on **MPEP 2141.02** citation that "Because that insight was contrary to the understandings and expectations of the art, the structure effectuating it would not have been obvious to those skilled in the art" 713 F.2d at 785, 218 USPQ, the claimed present invention is unobvious over the prior art.

Thus, applicant submits that rejections based on Yoshimura and Yamamura, or similarly Urruti and Yamamura, are improper and should be withdrawn.

6. **The Proposed Modification Can Not Change the Principle of Operation of a Reference. However, the final O.A. violates this Rule because the proposed modification or combination changes Yoshimura's operation principle of "as a whole, limiting such factors described above" including "a preform diameter, structural factors of the drawing furnace ..." and no preform diameter measuring step in his process.**

   MPEP 2143.01 THE PROPOSED MODIFICATION CANNOT CHANGE THE PRINCIPLE OF OPERATION OF A REFERENCE

   If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959)

   The court reversed the rejection holding the "suggested combination of references would require a substantial reconstruction and redesign of the elements shown in [the primary reference] as well as a change in the basic principle under which the [primary reference] construction was designed to operate." 270 F.2d at 813, 123 USPQ at 352.

   Thus, applicant submits that the rejections based on the proposed modification or combination of Yoshimura and Yamamura (which is also in different scope and content) by changing the principle of operation of Yoshimura are improper and should be withdrawn.

7. **The Proposed Modification Cannot Render the Prior Art Unsatisfactory for Its Intended Purpose. However, the examiner proposed modification or combination makes the both references processes destroyed and render the prior art unsatisfactory for its intended purpose of fast and quality manufacturing, then there is no suggestion or motivation to make the proposed modification. (Refer to MPEP 2143.01, 2145 III)**

MPEP 2143.01 THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE

If proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984)

However, in the A.A. the examiner wrongly cites MPEP 707.07(f) 7.37.02 for his proposed inoperative combination which is without any teaching or suggestion in the prior art. Really, the 7.37.02 case does not support inoperative combination which is of course unsatisfactory. Here, the key fact is that even as the examiner's proposed combination of two different processes physically, but the combined processes can not be run properly, and do destroy both processes and final product, and do destroy the primary reference purpose, and do change the principle of the primary reference stated in the references teachings.

MPEP 2145 III also states "However, the claimed combination cannot change the principle of operation of the primary reference or render the reference inoperable for its intended purpose. See MPEP § 2143.01."

It is a fault of the A.A. to wrongly cite MPEP 7.37.02 against the fact and to support an inoperative combination. However, MPEP 7.37.02 does not support the A.A. statement of disregarding inoperativeness of the proposed combination. The A.A. argument is in error and fails to follow MPEP 2143.01 and 2145 III.

From MPEP 2143.01, *In re Gordon,* 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984), and A.3.5 and B.3.7 of 4-7-2005 Reply, it is clear there is no suggestion or motivation to make the proposed modification or combination.

Thus, applicant submits that the rejections based on the proposed combination of Yoshimura and Yamamura, or Urruti and Yamamura, are improper and should be withdrawn because the proposed modification or combination cannot render the prior art unsatisfactory for its intended purpose.

8. **A series of issued patents as cited references further prove that different measurements in a large complex process and control are challenging and unobvious to a person having ordinary skill in the art.**

Please refer to the prior art including cited Harding (1988), Yoshimura (1991), Urruti (1996), Roba (2002).

Applicant highly honors these references and recognizes their inventions. At the same time, applicant respectfully requests the PTO to recognize his novel, useful and unobvious invention as claimed.

As a reference to applicant's work quality, applicant has published more than 80 papers in control and systems in various peer refereed international journals and international conference proceedings. He is also a frequent reviewer for more than 20 international journals with his reputation – fairness, correctness, constructiveness and expertise. Also, the North Carolina is a major base for manufacturing optical fiber in the US and the world. Applicant was invited to present seminar by major optical fiber manufacturing company in the world.

Applicant respectfully requests the PTO to recognize the claimed present invention patentable.

9. **Examiner recognized in his Office Communication – written Interview Summary of 3-15-2005 that "a superior embodiment using a specific algorithym may be patentable, but the claims are broad and are not limited to that specific algorithym".**

Applicant points out that the related claims have specific limitations, such as that based on ΔD (the deviation of the preform outer diameter), $D+\Delta D$ (the preform measurement) and D (its nominal value), or two different outer diameter data sets of the bare fiber, and/or their combinations in the Claims.

The present invention includes the new patentable subject matter in optical fiber drawing process. These novel, useful and unobvious claimed physical features over the prior art as a whole include: measuring preform outer diameter, using new robust control method and new operation principles involving ΔD, $D+\Delta D$ and D, having double bare fiber measurements at two different locations before any coating device, using new operation principle including two different bare fiber diameter measurement data sets to control the preform feeding speed and fiber drawing speed. These new claimed features make new unexpected good results as stated above.

IV. Respectful Request for Reconsideration

From all of the above and the previously submitted Replies, it can be seen that the claims of the present invention are patentable over the prior art.

Therefore, Applicant respectfully requests the PTO for reconsideration.

V. Conclusion

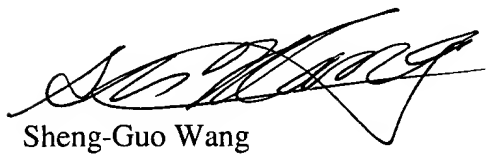
For all of the above reasons, applicant respectfully submits that the claims are now in proper form, and that the claims all define patentably over the prior art. Therefore applicant submits that this application is now in condition for allowance, which action he respectfully solicits.

Applicant respectfully requests the PTO to view and recognize the new, useful, unobvious and patentable merit of the claimed present invention as whole.

VI. Conditional Request for Constructive Assistance

Applicant has amended the claims of this application so that they are proper, definite, and define novel structure which is also unobvious. If for any reason this application is not believed to be in full condition for allowance, applicant respectfully requests the constructive assistance and suggestions of the Examiner pursuant to MPEP §706.03(d) and §707.07(j) in order that undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,



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704-503-0747

May 10, 2005

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May 10, 2005 _____

Sheng-Guo Wang, Applicant